Case No.

1419

Application, Transcript,
Small Exhibits, Etc.

[redacted]

BEFORE THE
OIL CONSERVATION COMMISSION
Roswell, New Mexico
April 16, 1958

IN THE MATTER OF:

Case No. 1419

TRANSCRIPT OF PROCEEDINGS

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
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ALBUQUERQUE NEW MEXICO
3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
Roswell, New Mexico
April 16, 1958

IN THE MATTER OF:

Application of Standard Oil Company of Texas for the creation of the Atoka-Pennsylvanian Gas Pool and for the adoption of temporary special pool rules for said pool. Applicant, in the above-styled cause, seeks an order creating the Atoka-Pennsylvanian Gas Pool, Township 18 South, Range 26 East, Eddy County, New Mexico, and adopting temporary special pool rules for said pool providing for 320-acre spacing with fixed well locations and such other rules as the Commission may deem proper. CASE NO. 1419

BEFORE:

Honorable Edwin L. Mechem
Mr. A. L. Porter
Mr. Murray Morgan

TRANSCRIPT OF PROCEEDINGS

MR. PORTER: Next case to be considered is Case 1419.

MR. PAYNE: Application of Standard Oil Company of Texas for the creation of the Atoka-Pennsylvanian Gas Pool and for the adoption of temporary special pool rules for said pool.

MR. KELLAHIN: If it please the Commission, Jason Kellahin of Kellahin and Fox representing the applicant. I would also like to enter the appearance of Robert F. Fox of Santa Fe. We have two witnesses to be sworn.

(Witnesses sworn)

MR. KELLAHIN: I would like to call as our first witness Mr. M. R. Stipp.

M. R. STIPP

a witness, of lawful age, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A M. R. Stipp.

Q By whom are you employed, Mr. Stipp?

A Standard Oil Company of Texas.

Q What position?

A I am district geologist for the Roswell district, southeastern, New Mexico.

Q You have never testified before the New Mexico Oil Conservation Commission?

A I have not.

Q Mr. Stipp, what is your education and experience?

A Educated at University of California at Los Angeles and the University of Tulsa from which I graduated in 1948 with a Bachelor's degree in geology. I went to work for Standard Oil Company of Texas at that time.

Q As a geologist?

A As a geologist. I have been working in charge of the company's exploratory efforts in southern New Mexico for the past six years.

Q Are you familiar with the application which has been filed in this case? A I am, sir.

Q Are you familiar with the area involved in this application?

A I am familiar with the area.

Q How did you become familiar with that?

A The area was purchased at my recommendation, approximately, 1953.

Q Are the witness' qualifications acceptable?

MR. PORTER: Yes, sir, they are.

Q Now, referring to what has been marked as Exhibit No. 1, Mr. Stipp, will you state what that is?

A Exhibit No. 1 is the most lefthand map on the display board. It is a lease hold map of what we originally termed our South Artesia area in Township 18 South, Range 26 East.

Q Does that include the Pennsylvanian formation which is included in the application? A That is correct.

Q Does that Exhibit show the location of the discovery well in that area?

A Yes, it does. If I may point out, it is 660 from West, 1980 from south, Section 14, Township 18 South, Range 26 East.

Q Now, have you made a location of a proposed well to be drilled?

A Yes, sir. We have filed that one with the Commission as a proposed location. No activity has been started to date other

than staking the location. It is located 1650 from south line and 1980 from east line, Section 15.

Q Now, on Exhibit No. 1, there are two areas outlined in red. What are those, Mr. Stipp?

A Those are the proposed gas units as indicated in the order.

Q Do you know whether the ownership in those units has been pooled or not?

A Yes, sir, they have been.

Q Now, referring to what has been marked as Exhibit No. 2, what is that designed to show?

A Exhibit No. 2 is basically a contour map on the top of the present Pennsylvanian -- if I may jump ahead here, it is contoured as indicated on Exhibit No. 3 at the base of the Pennsylvanian and top of the Mississippian. It is a correlation point that we are able to carry in our geological work in this area. Overlaying the contour map, colored in yellow, is a trend of lower Pennsylvanian Sand. The up depth limit, as marked on here, is a wedgeout in the subsurface of the productive sand.

Q Now, you say that was contoured on the base of the Pennsylvanian. How was that picked, Mr. Stipp?

A Those points from which the contours were drawn were picked on the electric logs with additional interpretations given by sample logs which are made from cutting and cores.

Q Well, now, does that exhibit reflect the presence of a continuous sand body, in your opinion?

A The contour map is strictly a map with reference to sea level on a correlatable point that appears at the base of the Pennsylvanian. The yellow coloring indicates our impression of the continuity of that sand.

Q Well, is the sand present in other wells as shown by your exhibit?

A There --

Q Stratographic intervals?

A There are approximately six wells controlling the position of this northeast-southwest trend of sand. Each of those six wells has that particular sand in it.

Q At approximately --

A At approximately that same stratographic position.

Q Now, did you make an examination of cuttings and cores?

A Yes, sir, we have. We have viewed the cores and the cuttings from all of those wells and find them to be relatively consistent in nature.

Q And in your opinion, are they the same sand?

A In our opinion, they are the same sand.

Q Now, in your opinion, is the Pennsylvanian sand present and continuous throughout Sections 14 and 15, then?

A In my opinion, consistent with the information we have at hand, it is continuous and present throughout.

Q Now, referring to what has been marked as Exhibit No. 3, will you state what that is?

A Exhibit No. 3 is a cross section showing various electric and radioactive logs for eight wells in northern Eddy County and extreme western Lea County, New Mexico. It covers a distance of approximately thirty miles in a northeast-southwest orientation.

Q Is that shown by an insert map which appears on the exhibit?

A An insert map of the exhibit indexes the location of the various wells.

Q Now, what comment do you have to make in connection with that Exhibit, Mr. Stipp?

A First of all, let me caution you that these wells are not placed on here in regard to distances between them, they are simply arranged for convenience sake, and no relative distance is indicated here. The main object that I may point out here is the continuity of a sand trend in the lower Pennsylvanian, but it appears in five of the eight wells on the cross section. A secondary sand above that appears in four and probably five of those wells.

Q Now, in addition to the wells shown on Exhibit No. 3, there are some wells closer to the discovery well, are there not?

A There are two producing wells in the Red Lake Pennsylvanian Pool that are closer.

Q Now, referring to Exhibit No. 4, what does that show?

A Exhibit No. 4 is composed of a cross section, being three electric logs; the Standard of Texas No. 1 Everest on the left and the two gas producing wells on the Humble No. 1, and Chuck Bruff

units.

Q Where are those two latter wells located?

A The latter two wells are approximately four to five miles northeast from the Standard of Texas well.

Q Now, does that Exhibit show information from which you can conclude a continuous sand body is present?

A The Exhibit shows correlations which in our geological opinion are irrefutable that the zones as marked carry through and that the sand is one and the same.

Q Now, on the basis of that information, would you say that the sand is continuous and present through Sections 14 and 15 in Township 18, Range 26 East?

A This is a matter of extrapolation. There is a distance of five miles there. Our impression and interpretation is that it continues to the southwest and west as such that it would cover all of Sections 14 and 15.

Q Now, upon the drilling of this projected well, you would have additional information from which you could state a better conclusion, would you not? A That is true, sir.

Q Is there anything else you care to add to your comments, Mr. Stipp?

A I would like to add that on Exhibit 3 we have shown the sand to be in the same relative position. I do not mean to indicate that it is continuous throughout the thirty miles, the trend of the sand zone is continuous. There may be breaks in the sand itself or

in the permeability of the sand.

MR. KELLAHIN: That's all the questions we have.

MR. PORTER: Anyone have a question of Mr. Stipp? Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Stipp, is this -- on your Exhibit No. 4 -- is this well on the left-hand side of the Exhibit the subject well that has been completed in the gas -- A That is correct.

Q I notice on this Exhibit that the drillstem test indicates quite a bit of oil.

A That was condensate, sir, and later production tests revealed there to be -- if I may take some of the engineer's words here, -- I believe it is eleven barrels per minute on the production test.

Q This is after some production on it?

A Yes, sir.

Q Eleven barrels per minute per cubic foot?

A Yes.

Q You haven't tested as to the permeability of the sand, and such as that?

A I would prefer Mr. Graham testify to that.

MR. NUTTER: That is all.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Stipp, were Exhibits 1 through 4 prepared by you or under your direction and supervision?

A They were.

Q I would like to offer at this time Exhibits 1 through 4 in evidence.

CROSS EXAMINATION

BY MR. DUNN:

MR. DUNN: David Dunn, with Union Oil Company. Mr. Stipp, would you give us the approximate thickness of the sands in the three wells shown on your Exhibit No. 4?

A Yes, sir. They are approximately forty feet thick.

Q In all cases?

A In all cases.

Q What about the permeability or the porous portions of that sand? Do you have an estimate on the thickness of that porous nature in the three wells on that section?

A I do not have any data as to the permeability of the Humble wells.

MR. DUNN: That is all.

MR. NUTTER: Well, is the entire 40-foot section permeable?

A The Standard of Texas Well, on the basis of the microlog, approximately 35 feet are porous and permeable.

MR. NUTTER: 35 out of 40?

A Yes, sir.

MR. NUTTER: Thank you.

MR. PORTER: Any other questions of the witness? You may be excused.

(Witness excused)

MR. KELLAHIN: Call Mr. Graham, please.

J. R. GRAHAM

a witness, of lawful age, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A J. R. Graham.

Q By whom are you employed, Mr. Graham?

A Standard Oil Company of Texas.

Q What is your position?

A I am senior engineer for the Standard Oil Company of Texas.

Q Where are you located? A Houston.

Q Have you ever testified before the New Mexico Oil Conservation Commission?

A No, sir, I have not.

Q Would you briefly state your education, experience and qualifications as an engineer, Mr. Graham?

A Yes, sir. I graduated from Louisiana State University in 1949 with a Bachelor of Science degree in petroleum engineering. Since that time I have been employed by the Standard Oil Company of Texas in various capacities; as drilling engineer, production engineer, district engineer, production foreman, and I am now senior

engineer for the company.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. PORTER: Yes, sir, they are.

Q Now, Mr. Graham, are you familiar with the application which has been filed in this case?

A Yes, sir, I am.

Q Have completion data on the Everest No. 1 Well been filed with the Commission?

A Yes, sir, it has.

Q Will you briefly outline for the record the completion information on that well?

A All right, sir. The Everest No. 1 Well was drilled to an actual depth of 10,542 feet which is a minus 7,199 feet, plugged back to 9,267 feet minus 6,925. The casing program is as follows: 13 3/8 and 1,208 feet with 1,464 sacks. Circulation was to the cellar; 9 5/8 and 3,000 feet with 1,500 sacks circulated at approximately 130 sacks. 7-inch casing was cemented at 9,370 feet, which is a subsea of 6,027 feet, cemented with 600 sacks. Top of cement by temperature survey on the 7-inch was 7,158 feet. The well was perforated in the lower Pennsylvanian sand. Perforations are from 9,079 feet to 9,085 feet; from 9,089 feet to 9,093 feet, and from 9,095 to 9,116 feet. A back pressure test was conducted on the well on October 2nd, 1957, with a calculated open flow of 23,000,000. The gas liquid ratio on the test was 90,840 cubic feet per barrel. The gravity of the condensate was 55.8 degrees API.

Q Are any core analysis available from this well?

A Yes, sir. We have a full hole core analysis.

Q Has that been marked as Exhibit No. 5?

A Yes, sir.

MR. KELLAHIN: We have only one copy of the report analysis available and the witness will submit it as soon as he has completed his direct testimony.

Q (By Mr. Kellahin) Now, what interval was cored on this well, Mr. Graham?

A A full hole core analysis; 9,070 feet to 9,084 feet, of which 11 feet were recovered and analyzed. We have side-wall cores in the interval 9,079 to 9,006 feet. The average permeability in the 11 feet cored in the upper interval was 51 milidarcies. The average porosity in this same 11 feet was 9½ percent. The average porosity in the entire 33 feet that we interpret to be productive, or net pay, is 18.9 percent, using both side wall samples and the full hole core.

Q In addition to this, did you make any calculations on reserve, Mr. Graham?

A Yes, sir.

Q What other information did you use in connection with that calculation?

A We used a bottom hole pressure at a depth of 9,065 feet, that measure being obtained on a drillstem test as 3,747 PSI. The bottom hole temperature at 9,065 feet was 158 degrees Fahrenheit.

We used the well fluid gravity of .5617. Porosity average for the net pay, 18.9 percent. Comate water average for the 33 feet of net pay, 17.9 percent and from the microlog determined the net pay to be 33 feet.

Q Now, referring to what has been marked as Exhibit No. 6, what is that?

A That is a Schlumberger electrical log that we ran on the Everest No. 1 Well.

Q On that Exhibit, have you marked the formation tops, perforation, casing points, and other information?

A Yes, sir, we have.

Q Now, referring to Exhibit No. 7, the microlog, what does that show?

A The microlog is from the Everest No. 1 Well also and it indicates an effective pay of 33 feet.

Q Now, you stated you had made a reserve calculation. Have you made any study of the economics involved in the drilling in this area?

A Yes, sir, we have.

Q Have you prepared a summary, as Exhibit No. 8, on that information?

A Yes, sir, we have.

Q Now, referring to Exhibit No. 8, what does that show?

A That shows that we estimate the cost of drilling a well in this -- to this lower Pennsylvanian sand to be $172,700. The

first well cost approximately $297,000. It shows that by using the factors that I enumerated earlier, that the gas reserves under 320 acres are calculated to be twelve billion, two million cubic feet, that the liquid reserves and condensate are calculated to be 19,800 barrels and that the cost for developing two wells on 320 or 160 acre spacing would, of course, be double the cost of developing one well on 320, or $345.400. It shows that it is based on our estimates, or at least the -- our usual contract as to minimum taxes with gas companies, that we can expect to at least be assured of selling approximately 1 over 8,500 based on reserves, or in the case of 320-acre units, about 1,430,000 per day. It shows a gross working interest income to be $224 per day, gross royalty interest income of $32 per day, a pay out of 2.7 years for a 320-acre unit well, a pay out of 5.3 years for a 160-acre unit well.

Q Do you consider that an economic operation?

A We considered the 2.7 years as economically feasible. We could not consider the 5.3 economic feasibly, at least we have a hard time selling it to our management.

Q Upon what do you base your well costs?

A We base our well costs on the estimate to drill the Martin Well, Martin No. 1 Well, which has been approved and shown on our Exhibit No. 1.

Q And on what do you base your income figures as shown on this Exhibit?

A As stated earlier, we base the income figures on a sale

of one over 8,500 based on reserves.

Q At what prices?

A We can calculate a well price of the well fluid at eighteen cents, using sixteen cents for the gas, and approximately two cents for the condensate.

Q Now, based upon the information which is available to you at the present time, in your opinion, will one well effectively and economically drain and develop 320 acres?

A Of course, our information at this time on the reservoir itself is very limited. We do know that the average permeability in the 11 feet analyzed is 51 milidarcies. Bearing in mind that it is a gas reservoir with this 51 milidarcies permeability and the fact that we think that the two sections are underlined by the Pennsylvanian sand, we believe that at this time that a well will drain 320 acres, and it will drain it economically.

Q Will additional information be available within a period of one year?

A We anticipate that it will. We have indicated on Exhibit 1 a second well to be drilled, and we are now taking contracts for that well, or taking bids for contracts, and plan to start that well within the next two weeks. We anticipate drilling additional wells in the area and believe that by the end of one year we will have some additional data to base a more specific recommendation on.

Q Do you recommend a temporary spacing order of 320 acres for a period of one year?

A We recommend a one year temporary spacing order.

Q Now, the application filed in this case recommends the creation of a pool to be designated as the Atoka-Pennsylvanian Gas Pool. Do you have any recommendations as to the area to be included in that Pool?

A We are recommending that only Sections 14 and 15 be included at this time in the spacing order and in the Pool delineation.

Q In your opinion, is all of Sections 14 and 15, on the basis of information presently available, productive of gas?

A On the information that we have at this time we think that it is.

Q Do you have any recommendation to make as to well spacing?

A Our first well is located 660 from one line and 1980 from the other. We have tentatively located and have staked and located, I should say, our second well 990 from the closest unit line and 1980 from the east line of that unit. It is our recommendation that 990, 1980 be adopted for this Pool.

Q In that event, it would require an exception for the Everest No. 1?

A Yes, sir, that's correct.

Q Do you have any recommendation to make to the Commission as to the directions that should be taken on the formation of the drilling units?

A No, sir. We recommend that the operators be permitted to use any two continuous quarter sections either in the north-south

or east-west direction, and the main reason for that recommendation is that there are several small tracts in the area, and we think it would be easier to pool if we had that flexibility.

Q Is there anything further you wish to add to your testimony, Mr. Graham?

A No, sir.

Q Were Exhibits No. 5 through 8 prepared by you or under your direction?

A Yes, sir, they were, except one is a core analysis, of course, and two logs.

Q And the core analysis is the core analysis obtained by your company in the regular course of business?

A Yes, sir, by the Cole Laboratory.

MR. KELLAHIN: At this time we offer in evidence Exhibits 5 through 8 inclusive.

MR. PORTER: Without objection, these Exhibits will be admitted.

I believe you offered that core?

A Yes, sir.

MR. KELLAHIN: That is all.

CROSS EXAMINATION

BY MR. PORTER

Q Mr. Graham, I don't believe I got your estimate of the cost of completing the well.

A We estimate, for the second well, $172,700.

Q That's on your Exhibit No. 8?

A Yes, sir, that's right.

Q You say that at the end of the year you will have additional information?

A Yes, sir, we hope to. We have not signed a gas contract and not made a connection yet, but we do intend to produce this first well for drilling, the Martin No. 1 Well. We intend to use the gas both as drilling fuel and as drilling fluid, and we will obtain some information there, and we intend to continue our drilling program in the area and hope to have additional wells completed at the end of the year.

Q When do you expect to complete your Martin No. 1?

A The starting date, I estimate some time in the latter part of April, and we hope to complete it in about forty days, drilling days.

MR. PORTER: Does anyone have a question of Mr. Graham? Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q Mr. Graham, what evidence do you have that one well will drain 320 acres?

A Sir, we have very little evidence other than the permeability characteristics of the sand and the fact that it is a gas reservoir, and if it underlies 320 acres, it is our opinion that it will drain based on permeability and characteristics of the reservoir and if the fluids are free to move throughout the 320 acres.

Q Are there any other pools in the southeast New Mexico,

any other gas pools, completed in this same sand?

A It is my understanding that the two pools to the northeast, one being the Red Lake Pool, and the other, I believe the -- I can't recall the name of it, but it is about twelve miles to the northeast, is completed in this comparable Pennsylvanian sand, yes, sir. Empire Pool, I believe, is the one that is twelve miles to the northeast.

Q Has the Commission approved 320 acres for any of those pools?

A I believe they have for the Empire Pool, on a temporary basis. I am not sure of the expiration of that one year order, but that was a pool operated by Pan American. It is my understanding that they approved an order for that pool, Empire Pool.

Q Mr. Graham, you haven't determined that the order in the Empire Pennsylvanina Pool has expired?

A No, sir, I am not familiar with it other than what I have been told. They told me they approved a one year order for that pool. I don't think it has expired.

MR. PORTER: I think an investigation would prove that the order has expired.

Q (By Mr. Nutter) I want to ask a couple of questions here regarding the income that you have here. What is the formula that you base your income per day on?

A Well, the only basis we have at this time is a minimum pay contract that is offered to us by the gas company, at least

those are the figures we use to determine our pay outs, and we usually are offered 1 to 8,500 based on reserves. In otherwords, they will take one cubic feet per day per 8,500 cubic feet of reserves. In some contracts we have 7,300 in 10,000, but we use 1 to 8,500 as the usual.

Q And you have estimated your reserves under each tract based on core analysis?

A Yes, sir. We have estimated reserves based on core analysis and other factors. The 1 to 8,500, Mr. Nutter, is an average daily minimum take that the gas pipeline company assures us that they will take when we sign a contract.

Q Has the gas under this lease been contracted?

A No, sir, it has not.

Q So you don't know that the minimum take clause would be 1 to 8,500 in this particular case?

A No, sir, we don't know that it would be 1 to 8,500.

Q You don't know that the gas purchaser will take only the gas that is required by the minimum take clause?

A That is correct. That is a minimum take that they will assure us they will take, a daily average minimum, and we use those to calculate.

Q And if they take more than the minimum take, you have a better pay?

A Yes, sir, that's correct.

MR. NUTTER: That is all.

QUESTIONS BY MR. UTZ:

Q What was your footage recommendation? I didn't quite get it.

A 990 and 1980, sir. 990 from the closest unit line, 1980 from the more distant unit line.

Q 1980 from the section line, then?

A Yes, sir, that's correct.

Q No closer than 990 from the unit line?

A Yes, sir, that's correct.

Q Do you have a recommendation as to which way you would like these units to run?

A No, sir. I stated earlier that we had no recommendation, that they could either go east-west or north-south, just so they are continuous quarter sections.

Q Consist of a legal half section?

A Yes, sir, that's correct.

Q Now, as to your pool delineation, you want all of the sections, or have you recommended Sections 14 and 15?

A 14 and 15, yes, sir.

Q Of course, the east half of 14 and all of 15 is not yet proven, is it?

A Yes, sir, that's correct. It is not proven.

Q Wouldn't it be more practical to include a pool of 320 acres for your present completed Everest Well, and on that Pool, on 320-acre basis, a unit be approved?

A Yes, sir, that would be satisfactory with us. We base the two-section pool delineation -- that is based on our geologist's opinion that it underlies both sections, and we are assuming that it would be productive, but I am not familiar enough with our procedure here to know whether you take in a larger area than that already proved or not, so we just use the two-section because our geologist believes it is underlain by Pennsylvanian sand.

Q If the geologist proved to be wrong, they would be the ones --

A Yes, sir, that's right. They have been wrong before.

MR. UTZ: That's all I have.

QUESTIONS BY MR. COOLEY:

Q Mr. Graham, you state that the only evidence you have based the opinion that one well will drain 320 acres is on the core analysis?

A Yes, sir, the core analysis, 51 milidarcy permeability, mainly showing that there could be good movement of fluid in the reservoir and the fact that we think the sand is continuous over 320 acres. Of course, we will have to have additional information to really give a final opinion on that. At this time all we have is one well and all we can use is the permeability characteristics and the fact that it is underlain.

Q This one core involving this one small area is the only core that has been taken in this entire pool, is it not?

A Well, that's correct. These are the only permeability

measurements that have been made. We have measured porosity in the side walls since, but we have not measured permeability except in the 11 feet. That's the information we have.

Q Do you have any evidence that there is not wide variation?

A No, sir, not at this time. We have no reason to believe that there is or is not.

Q On your assumption that one well will drain 320 acres, wouldn't it be necessary that you know where the well is located on the 320-acre tract?

A Of course, the best way to determine -- in my opinion, one of the best ways to determine 320-acre tracts is to take interference tests, but on one well you will have to assume it is draining ratably 320 acres around the well.

Q That's my point. Under your proposed spacing plan, I believe, it would permit the drilling of a well 990 from the section line and 1980 feet from the section line --

A Yes, sir.

Q -- which would permit the drilling of both wells in the single section in either the south half or the north half, would it not?

A Yes, sir. It would permit drilling two wells in this section.

Q In your opinion, would this type of spacing pattern be as efficient as spacing the wells one either in the northeast quarter and one in the southwest quarter or one in the northwest quarter

and one in the southeast quarter? Would you have better drainage in that section if you staggered your wells in that fashion?

A Of course, the most efficient drainage would be to have the wells equally spaced in the reservoir, and I would have to answer yes to that, yes, sir.

Q Concerning the payout that you had calculated on these wells, that being 2.7 years for 320-acre well, and 5.3 years for 160-acre well, so long as the gas purchasers nominate given quantities of gas for this particular pool, wouldn't that be immaterial until such time as the area should become prorated?

A Yes, sir. I think it is common practice among operators to calculate payout based on reserves because companies, at least it is my understanding, take based on reserves where you have several pools and have to limit their takes. I think it is based on reserves, so we usually calculate our payout based on reserves. I think it is a valid calculation.

Q Well then, what is the purpose of coming at this time with 320-acre spacing with as little evidence as we have that one well would drain 320, why would it not be as feasible to remain on 160-acre spacing until it is prorated so that you can take whatever you could sell, produce whatever you could sell?

A I said that initially, in a reservoir, we look at the takes based on reserve. If you have a 640-acre unit in a 640-acre reservoir and you have four wells in it, you are going to sell the same amount of gas, in my opinion, or at least it is my understand-

ing, that you would sell if you had two wells in the reservoir because the gas company takes takes based on reserves, that's the way it is.

Q Provided two wells will drain 640?

A Yes, sir, and I don't think I can make a dogmatic statement that one well will drain that. With the limited evidence we have, we think it will.

MR. COOLEY: That is all.

QUESTIONS BY MR. UTZ:

Q Mr. Graham, according to the way I understand your footage location recommendation, your Martin No. 1 is already on a non-standard location, is that correct, sir?

A No, sir, I think we located it 990 from the north and 1980 from the east line of the section.

Q 1650 from the south line of the section?

A Yes, sir. Well, those are minimum distances, of course, and I understood that you located on minimum basis, that you are permitted to locate at least 990 and 1980 from the lines. My understanding is that as long as you are 990 from one line and 1980 from the other you are within spacing.

Q How close do you want to come to the section line?

A 1980.

Q You are 1650 on the south line now?

A Oh, I see. Well, it would have to be 1980 from the long side of the unit and 990 from the short side of the unit. I don't

see how you could locate 1980 from the long side without being 660 from the short side.

Q Wouldn't it be more practical for it to be 1650 and no closer than 990 from the unit line?

A From unit lines?

Q Yes.

A Yes, sir, that would be the same thing.

Q It would fit better?

A Yes, sir, that would fit it.

MR. UTZ: That's all.

MR. PORTER: Mr. Utz, I will ask you a question. What do you mean by unit line?

MR. UTZ: I mean the proration unit.

MR. PORTER: The 320-acre unit line?

MR. UTZ: Yes, sir.

MR. PORTER: Thank you.

Anyone else have any questions? Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q While we are on this, is your Martin No. 1 Well in a standard location according to the proposed rules?

A I just thought we talked about that, but it is my --

Q I don't mean the Martin, the Everest?

A No, sir, it is not.

Q That is an exception?

A Yes, sir, we asked that originally.

MR. NUTTER: Thank you.

MR. PORTER: Any further questions?

The witness may be excused.

MR. DUNN: May I ask a question?

MR.PORTER: Yes.

QUESTIONS BY MR. DUNN:

Q Do you know of any well in southeastern New Mexico or in the vicinity of your test that is producing oil from this same sand or correlative sand?

A Sir, I know of none, if I can answer that way.

Q Let me word the question a little differently. Are all of the correlative sands that you are acquainted with producing sand?

A I am only acquainted within the immediate area of the Everest, and I understand there is not one within four miles producing from this sand and that's my best knowledge of this sand, within four miles.

MR. DUNN: That is all.

MR. PORTER: Anyone else have a question? I believe you offered your Exhibits already.

MR. KELLAHIN: Yes.

MR. PORTER: The witness may be excused.

(Witness excused)

MR. PORTER: Any further testimony to be presented in

this case? Any statements?

MR. KELLAHIN: If the Commission please, obviously, the information we have with one well available, which we think is important, I am certain, on the basis of the information which is available to this pool, and the witnesses have testified that in their opinion it will effectively drain 320 acres, and due to the economics involved, and the fact, as pointed out, that there is not even a gas connection in there as yet, we feel a temporary order for a period of one year is fully justified until the additional information can be obtained, at which time we will return before the Commission and present out testimony to show whether the 320-acre spacing should be continued or not. But meanwhile, the pool should be developed on a uniform 320-acre pattern until such time as the additional information is available because of the economic situation and because of the core information and other information which is available and does indicate that one well will drain and develop 320 acres, and development on 160 acres, in the meanwhile, could and probably result in waste. Thank you.

MR. PORTER: Anyone else have anything further to say in this case?

MR. DUNN: David Dunn with Union Oil. Union wishes to make the statement that we do not have any acreage in the immediate vicinity of this test. We do have considerable holdings in Eddy County that we consider to be prospective of gas in the lower Pennsylvanian. We have completed a gas well south of this area a

considerable distance from the lower Pennsylvanian sand. We feel that 320 acres is the bare minimum and we question the advisability of draining anything less than a 640-acre spacing for the economical development of gas in Eddy County, New Mexico from the lower Pennsylvanian.

MR. ANDERSON: Donald Anderson of Malco, Malco also owns considerable acreage in Eddy County along this sporatic trend and owns an interest in three wells, and we protest the inclusion of the east half of Section 14, in which we are part owners of a 40-acre tract, on the basis that the gas production may be so marginal that you cannot justify less or a smaller spacing than 640 acres. We are the major owners in the two wells northeast, four miles northeast, and feel strongly that those two wells are so marginal that they should not have been drilled unless the spacing is granted on a 640-acre basis, and we would very strongly object at this time to including the east half of Section 14 in the area.

MR. PAYNE: We have a telegram here that I would like to read.

"Sinclair Oil & Gas Company wishes to concur with Standard of Texas in the following: Rules for Atoka Penn Gas Pool. No. 1, 320-acre proration units with units to run either north-south or east-west. 2: well spacing to be 990 feet from lease lines and 1980 feet between wells. 3: a location formula, 100 percent acreage. Sinclair Oil & Gas Company, Signed Layton A. Webb."

MR. PORTER: Anything further to be said? If not, we

will take the case under advisement and proceed -- take up next Case 1424.

C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, J. A. TRUJILLO, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in stenotype and reduced to typewritten transcript under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this 5th day of May, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
Notary Public

My Commission Expires:

October 5, 1960.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

May 5, 1958

COPY

Mr. Jason Kellahin
P.O. Box 1713
Santa Fe, New Mexico

Dear Mr. Kellahin:

On behalf of your client, Standard Oil Company of Texas, we enclose two copies of Order R-1171 issued May 5, 1958, by the Oil Conservation Commission in Case 1419, which was heard on April 16th at Roswell.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF THE STATE OF NEW
MEXICO FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 1419
Order No. R-1171

APPLICATION OF STANDARD OIL COMPANY
OF TEXAS FOR THE CREATION OF THE ATOKA-
PENNSYLVANIAN GAS POOL IN EDDY COUNTY,
NEW MEXICO AND FOR THE ADOPTION OF
TEMPORARY POOL RULES FOR SAID POOL.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 16, 1958, at Roswell, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 5th day of May, 1958, the Commission, a quorum being present, having considered the application and the evidence adduced, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Standard Oil Company of Texas, seeks an order creating the Atoka-Pennsylvanian Gas Pool with vertical limits consisting of the Pennsylvanian formation and horizontal limits consisting of the W/2 Section 14 and S/2 Section 15, Township 18 South, Range 26 East, NMPM, Eddy County, New Mexico.

(3) That the applicant further proposes that temporary 320-acre spacing be established in the said proposed Atoka-Pennsylvanian Gas Pool.

(4) That only one well has been drilled to the Pennsylvanian formation in the vicinity of the proposed Atoka-Pennsylvanian Gas Pool, being the applicant's Everest Well No. 1 in the SW/4 of said Section 14.

(5) That the completion of the above-described Everest Well No. 1 does not warrant the creation of a pool of the magnitude proposed by the applicant but that it does warrant the creation of a pool consisting of the SW/4 of said Section 14.

(6) That the applicant has failed to prove that one well will economically and efficiently drain 320-acres in the Atoka-Pennsylvanian Gas Pool or that there is any justification for the establishment of temporary 320-acre spacing in said pool in the absence of such proof.

(7) That the operation, spacing, and drilling of wells in the Atoka-Pennsylvanian Gas Pool should continue to be governed by Rule 104 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That a new pool for the production of gas from the Pennsylvanian formation be and the same is hereby created and designated as the Atoka-Pennsylvanian Gas Pool consisting of the following described area:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM
Section 14: SW/4

(2) That the application of Standard Oil Company of Texas for the establishment of temporary 320-acre spacing in the Atoka-Pennsylvanian Gas Pool, be and the same is hereby denied.

(3) That the operation, spacing, and drilling of all wells in the Atoka-Pennsylvanian Gas Pool shall continue to be governed by the provisions of Rule 104 of the Commission Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

A. L. PORTER, Jr., Member & Secretary

ir/

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

APPLICATION OF STANDARD OIL COMPANY OF TEXAS FOR AN ORDER CREATING AN ESTABLISHED GAS POOL FOR PENNSYLVANIAN PRODUCTION AND ESTABLISHING 320-ACRE GAS UNITS IN SECTIONS 14 AND 15, T. 18 S., R. 26 E., EDDY COUNTY, NEW MEXICO

CASE No. 1419

APPLICATION

Comes now Standard Oil Company of Texas and applies to the Oil Conservation Commission of the State of New Mexico for an order establishing a designated gas pool for production from the Pennsylvanian Sand of gas and gas condensate in Township 18 South, Range 26 East, N.M.P.M., Eddy County, New Mexico to be designated as the Atoka-Pennsylvanian Gas Pool, and for the adoption of pool rules on a temporary basis for a period of one year providing for uniform spacing and establishment of 320-acre drilling units for said pool, units to consist of adjacent quarter-sections, with well locations fixed at 990 feet and 1980 feet from outside boundaries of said units, and for such other and further orders as the Commission may determine proper.

In support of this application, the applicant would show the Commission:

1. That applicant has completed its J. H. Everest No. 1 well at a location 1980 feet from the South line and 660 feet from the West line of Section 14, Township 18 South, Range 26 East, N.M.P.M., Eddy County, New Mexico, as a gas condensate producer in the Pennsylvanian sand.

2. That applicant is the operator of a 320-acre tract pooled in the Pennsylvanian Sand, and consisting of the W 1/2 of Section 14, T. 18 S., R. 26 E., Eddy County, New Mexico.

3. That applicant is the operator of a 320-acre pooled tract in the Pennsylvanian Sand and consisting of the S 1/2 of Section 15, T. 18 S., R. 26 E., N.M.P.M., Eddy County, New Mexico

4. That applicant has numerous leases in and adjoining Sections 14 and 15, in T. 18 S., R. 26 E., Eddy County, N. M.

5. That applicant plans to drill its Martin No. 1 well in the NW 1/4 SE 1/4 of Section 15, T. 18 S., R. 26 E., for production from the Pennsylvanian Sand, Eddy County, New Mexico.

6. That on the basis of information presently available, it is believed that one well will efficiently and economically drain and develop 320 acres in the area involved, and that the establishment of 320-acre drilling units for the pool is in the interests of conservation, will prevent waste, and that correlative rights will be protected.

WHEREFORE applicant requests that this application be set for hearing by the Commission at the regular April, 1958, hearing of the Commission, or as soon thereafter as may be possible, and that after notice and hearing asprovided by law, the Commission enter its order creating a new gas condensate pool for Pennsylvanian production, fixing drilling units at 320 acres, establishing well locations, and such other and further orders as may be proper.

Respectfully submitted,

STANDARD OIL COMPANY OF TEXAS

By:

KELLAHIN And FOX
P. O. Box 1713
Santa Fe, New Mexico
Attorneys for Applicant

Jason W. Kellahin

No. 11-58

SUPPLEMENTAL DOCKET: REGULAR HEARING APRIL 16, 1958

Oil Conservation Commission 9 a.m., Elks Club, 200 North Richardson Avenue

ROSWELL, NEW MEXICO

CASE 1424: Application of Humble Oil and Refining Company for an unorthodox well location. Applicant, in the above-styled cause, seeks an order authorizing an unorthodox oil well location for its Federal-North Kirtland Unit Well No. 1 at a point 1230 feet from the North line and 998 feet from the East line of Section 19, Township 30 North, Range 14 West, San Juan County, New Mexico, said well to be drilled as a wildcat to the Dakota formation.

April 3, 1958

ga

Santa Fe, New Mexico
April 5, 1958

Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Case 1419 Application of Standard of Texas
Hearing of April 16, 1958

Gentlemen:

The above captioned application provides for the creation of the Atoka-Pennsylvania Gas Pool and to govern spacing in Township 18 S., Range 26 E.

While I have no objection to the creation of the Pool, I do herein register objection to the spacing of 320 acres. My reason for this is that there are adjacent holdings too small to qualify under the 320 acre spacing and this would result in draining from these holdings where drilling would not be permitted and consequently no production.

It is my understanding that there is a producing oil well in Section 14 of the above township with sufficient production to qualify this area as an oil field. This is a deep well and it is my understanding also that in this same township there are numerous shallow wells being worked for oil and that any gas flows are not being conserved but allowed to waste.

Thank you for giving consideration to this matter.

Yours very truly,

W. H. Swearingen

W. H. SWEARINGEN

Box 93, Santa Fe

Std Oil Co. of Tex.
EX # 5 CASE #1419

CORE LABORATORIES, INC
Petroleum Reservoir Engineering
DALLAS 1, TEXAS

September 3, 1957

REPLY TO
P. O. BOX 36
MIDLAND, TEXAS

Standard Oil Company of Texas
Box 1660
Midland, Texas

Attention: Mr. J. P. Jones

Subject: Core Analysis
Everest No. 1 Well
Wildcat
Eddy County, New Mexico
Location: Sec. 14-T18S-R26E

Gentlemen:

Diamond coring equipment and water base mud were used to core the interval, 9027 to 9112 feet, in the Everest No. 1. Samples of recovered formation on which analysis was desired were selected as directed by representatives of Standard Oil Company of Texas, were quick-frozen to preserve fluid content, and were transported to the Hobbs laboratory for analysis. Percussion type side wall samples were taken between 9076 and 9116 feet, and these samples were analyzed for porosity and fluid content at the Monahans laboratory. The results of all analyses are presented in this report.

Pennsylvanian formation analyzed between 9070 and 9084 feet exhibits favorable residual liquid saturations, and is interpreted to be gas productive at points of measurable permeability. The average permeability of the 11 gas productive feet in this zone is 51 millidarcys, and the total observed natural productive capacity is 561 millidarcy-feet, probably adequate to support satisfactory rates of production without the necessity for treatment. The average porosity of this interval is 9.5 per cent, and the average empirically calculated connate water saturation is 30 per cent of pore space. Average core analysis data for this interval have been summarized on page one.

Results of the analysis of side wall samples taken at various depths between 9076 and 9116 feet are presented in tabular and graphical form on the lower portion of the Completion Coregraph.

We sincerely appreciate this opportunity to be of service to you and trust that the information furnished with this report will prove useful in making a preliminary evaluation of the Pennsylvanian formation analyzed from this well.

Very truly yours,

Core Laboratories, Inc.

RS Bynum Jr (PS)

R. S. Bynum, Jr.,
District Manager

RSB:JDJ:sw
7 cc. - Addressee

Form F-11B

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

Page 1 of 1 File WP-3-860 FC
Well Everest No. 1

CORE SUMMARY AND CALCULATED RECOVERABLE OIL

FORMATION NAME AND DEPTH INTERVAL: Pennsylvanian 9070.0-9084.0

FEET OF CORE RECOVERED FROM ABOVE INTERVAL	14.0	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	30.9
FEET OF CORE INCLUDED IN AVERAGES	11.0	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE (c)	30
AVERAGE PERMEABILITY: MILLIDARCYS	51	OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET	561	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT	9.5	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	0.0	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	

Calculated maximum solution gas drive recovery is barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. (*Please refer to footnotes for further discussion of recovery estimates.*)

FORMATION NAME AND DEPTH INTERVAL:

FEET OF CORE RECOVERED FROM ABOVE INTERVAL		AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	
FEET OF CORE INCLUDED IN AVERAGES		AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	
AVERAGE PERMEABILITY: MILLIDARCYS		OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET		ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT		ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE		CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	

Calculated maximum solution gas drive recovery is barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. (*Please refer to footnotes for further discussion of recovery estimates.*)

(c) Calculated (e) Estimated (m) Measured (*) Refer to attached letter.

These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.

CASE 1419
EX. 8

STANDARD OIL COMPANY OF TEXAS
ECONOMIC COMPARISON OF
160 AND 320 ACRE SPACING
ATOKA (PENN.) FIELD
EDDY COUNTY, NEW MEXICO

Area, acres	320	320	160
Number of wells	1	2	1
Total investment, dollars	172,700	345,400	172,700
Gas reserves, MMCF	12,200	12,200	6,100
Liquid reserves, barrels	91,800	91,800	45,900
Total gas production, MCFPD	1,430	1,430	715
Gross W.I. income, dollars/day	224	224	112
Gross R.I. income, dollars/day	32	32	16
Payout, years	2.7	5.3	5.3
Rate of return, %	40	19	19
Profit to investment ratio	4.3	1.8	1.8

Case No.

1419

Application, Transcript,
Small Exhibits, Etc.

[redacted]

OIL CONSERVATION COMMISSION
Roswell, New Mexico
April 16, 1958

IN THE MATTER OF:

Case No. 1419

TRANSCRIPT OF PROCEEDINGS

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
Roswell, New Mexico
April 16, 1958

IN THE MATTER OF:

Application of Standard Oil Company of Texas for the creation of the Atoka-Pennsylvanian Gas Pool and for the adoption of temporary special pool rules for said pool. Applicant, in the above-styled cause, seeks an order creating the Atoka-Pennsylvanian Gas Pool, Township 18 South, Range 26 East, Eddy County, New Mexico, and adopting temporary special pool rules for said pool providing for 320-acre spacing with fixed well locations and such other rules as the Commission may deem proper. CASE NO. 1419

BEFORE:

Honorable Edwin L. Mechem
Mr. A. L. Porter
Mr. Murray Morgan

TRANSCRIPT OF PROCEEDINGS

MR. PORTER: Next case to be considered is Case 1419.

MR. PAYNE: Application of Standard Oil Company of Texas for the creation of the Atoka-Pennsylvanian Gas Pool and for the adoption of temporary special pool rules for said pool.

MR. KELLAHIN: If it please the Commission, Jason Kellahin of Kellahin and Fox representing the applicant. I would also like to enter the appearance of Robert F. Fox of Santa Fe. We have two witnesses to be sworn.

(Witnesses sworn)

MR. KELLAHIN: I would like to call as our first witness Mr. M. R. Stipp.

M. R. STIPP

a witness, of lawful age, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A M. R. Stipp.

Q By whom are you employed, Mr. Stipp?

A Standard Oil Company of Texas.

Q What position?

A I am district geologist for the Roswell district, southeastern, New Mexico.

Q You have never testified before the New Mexico Oil Conservation Commission?

A I have not.

Q Mr. Stipp, what is your education and experience?

A Educated at University of California at Los Angeles and the University of Tulsa from which I graduated in 1948 with a Bachelor's degree in geology. I went to work for Standard Oil Company of Texas at that time.

Q As a geologist?

A As a geologist. I have been working in charge of the company's exploratory efforts in southern New Mexico for the past six years.

Q Are you familiar with the application which has been filed in this case? A I am, sir.

Q Are you familiar with the area involved in this application?

A I am familiar with the area.

Q How did you become familiar with that?

A The area was purchased at my recommendation, approximately, 1953.

Q Are the witness' qualifications acceptable?

MR. PORTER: Yes, sir, they are.

Q Now, referring to what has been marked as Exhibit No. 1, Mr. Stipp, will you state what that is?

A Exhibit No. 1 is the most lefthand map on the display board. It is a lease hold map of what we originally termed our South Artesia area in Township 18 South, Range 26 East.

Q Does that include the Pennsylvanian formation which is included in the application? A That is correct.

Q Does that Exhibit show the location of the discovery well in that area?

A Yes, it does. If I may point out, it is 660 from West, 1980 from south, Section 14, Township 18 South, Range 26 East.

Q Now, have you made a location of a proposed well to be drilled?

A Yes, sir. We have filed that one with the Commission as a proposed location. No activity has been started to date other

than staking the location. It is located 1650 from south line and 1980 from east line, Section 15.

Q Now, on Exhibit No. 1, there are two areas outlined in red. What are those, Mr. Stipp?

A Those are the proposed gas units as indicated in the order.

Q Do you know whether the ownership in those units has been pooled or not?

A Yes, sir, they have been.

Q Now, referring to what has been marked as Exhibit No. 2, what is that designed to show?

A Exhibit No. 2 is basically a contour map on the top of the present Pennsylvanian -- if I may jump ahead here, it is contoured as indicated on Exhibit No. 3 at the base of the Pennsylvanian and top of the Mississippian. It is a correlation point that we are able to carry in our geological work in this area. Overlaying the contour map, colored in yellow, is a trend of lower Pennsylvanian Sand. The up depth limit, as marked on here, is a wedgeout in the subsurface of the productive sand.

Q Now, you say that was contoured on the base of the Pennsylvanian. How was that picked, Mr. Stipp?

A Those points from which the contours were drawn were picked on the electric logs with additional interpretations given by sample logs which are made from cutting and cores.

Q Well, now, does that exhibit reflect the presence of a continuous sand body, in your opinion?

A The contour map is strictly a map with reference to sea level on a correlatable point that appears at the base of the Pennsylvanian. The yellow coloring indicates our impression of the continuity of that sand.

Q Well, is the sand present in other wells as shown by your exhibit?

A There --

Q Stratographic intervals?

A There are approximately six wells controlling the position of this northeast-southwest trend of sand. Each of those six wells has that particular sand in it.

Q At approximately --

A At approximately that same stratographic position.

Q Now, did you make an examination of cuttings and cores?

A Yes, sir, we have. We have viewed the cores and the cuttings from all of those wells and find them to be relatively consistent in nature.

Q And in your opinion, are they the same sand?

A In our opinion, they are the same sand.

Q Now, in your opinion, is the Pennsylvanian sand present and continuous throughout Sections 14 and 15, then?

A In my opinion, consistent with the information we have at hand, it is continuous and present throughout.

Q Now, referring to what has been marked as Exhibit No. 3, will you state what that is?

A Exhibit No. 3 is a cross section showing various electric and radioactive logs for eight wells in northern Eddy County and extreme western Lea County, New Mexico. It covers a distance of approximately thirty miles in a northeast-southwest orientation.

Q Is that shown by an insert map which appears on the exhibit?

A An insert map of the exhibit indexes the location of the various wells.

Q Now, what comment do you have to make in connection with that Exhibit, Mr. Stipp?

A First of all, let me caution you that these wells are not placed on here in regard to distances between them, they are simply arranged for convenience sake, and no relative distance is indicated here. The main object that I may point out here is the continuity of a sand trend in the lower Pennsylvanian, but it appears in five of the eight wells on the cross section. A secondary sand above that appears in four and probably five of those wells.

Q Now, in addition to the wells shown on Exhibit No. 3, there are some wells closer to the discovery well, are there not?

A There are two producing wells in the Red Lake Pennsylvanian Pool that are closer.

Q Now, referring to Exhibit No. 4, what does that show?

A Exhibit No. 4 is composed of a cross section, being three electric logs; the Standard of Texas No. 1 Everest on the left and the two gas producing wells on the Humble No. 1, and Chuck Bruff

units.

Q Where are those two latter wells located?

A The latter two wells are approximately four to five miles northeast from the Standard of Texas well.

Q Now, does that Exhibit show information from which you can conclude a continuous sand body is present?

A The Exhibit shows correlations which in our geological opinion are irrefutable that the zones as marked carry through and that the sand is one and the same.

Q Now, on the basis of that information, would you say that the sand is continuous and present through Sections 14 and 15 in Township 18, Range 26 East?

A This is a matter of extrapolation. There is a distance of five miles there. Our impression and interpretation is that it continues to the southwest and west as such that it would cover all of Sections 14 and 15.

Q Now, upon the drilling of this projected well, you would have additional information from which you could state a better conclusion, would you not? A That is true, sir.

Q Is there anything else you care to add to your comments, Mr. Stipp?

A I would like to add that on Exhibit 3 we have shown the sand to be in the same relative position. I do not mean to indicate that it is continuous throughout the thirty miles, the trend of the sand zone is continuous. There may be breaks in the sand itself or

in the permeability of the sand.

MR. KELLAHIN: That's all the questions we have.

MR. PORTER: Anyone have a question of Mr. Stipp? Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Stipp, is this -- on your Exhibit No. 4 -- is this well on the left-hand side of the Exhibit the subject well that has been completed in the gas -- A That is correct.

Q I notice on this Exhibit that the drillstem test indicates quite a bit of oil.

A That was condensate, sir, and later production tests revealed there to be -- if I may take some of the engineer's words here, -- I believe it is eleven barrels per minute on the production test.

Q This is after some production on it?

A Yes, sir.

Q Eleven barrels per minute per cubic foot?

A Yes.

Q You haven't tested as to the permeability of the sand, and such as that?

A I would prefer Mr. Graham testify to that.

MR. NUTTER: That is all.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Stipp, were Exhibits 1 through 4 prepared by you or under your direction and supervision?

A They were.

Q I would like to offer at this time Exhibits 1 through 4 in evidence.

CROSS EXAMINATION

BY MR. DUNN:

MR. DUNN: David Dunn, with Union Oil Company. Mr. Stipp, would you give us the approximate thickness of the sands in the three wells shown on your Exhibit No. 4?

A Yes, sir. They are approximately forty feet thick.

Q In all cases?

A In all cases.

Q What about the permeability or the porous portions of that sand? Do you have an estimate on the thickness of that porous nature in the three wells on that section?

A I do not have any data as to the permeability of the Humble wells.

MR. DUNN: That is all.

MR. NUTTER: Well, is the entire 40-foot section permeable?

A The Standard of Texas Well, on the basis of the microlog, approximately 35 feet are porous and permeable.

MR. NUTTER: 35 out of 40?

A Yes, sir.

MR. NUTTER: Thank you.

MR. PORTER: Any other questions of the witness? You may be excused.

(Witness excused)

MR. KELLAHIN: Call Mr. Graham, please.

J. R. GRAHAM

a witness, of lawful age, having been first duly sworn on oath, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A J. R. Graham.

Q By whom are you employed, Mr. Graham?

A Standard Oil Company of Texas.

Q What is your position?

A I am senior engineer for the Standard Oil Company of Texas.

Q Where are you located? A Houston.

Q Have you ever testified before the New Mexico Oil Conservation Commission?

A No, sir, I have not.

Q Would you briefly state your education, experience and qualifications as an engineer, Mr. Graham?

A Yes, sir. I graduated from Louisiana State University in 1949 with a Bachelor of Science degree in petroleum engineering. Since that time I have been employed by the Standard Oil Company of Texas in various capacities; as drilling engineer, production engineer, district engineer, production foreman, and I am now senior

engineer for the company.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. PORTER: Yes, sir, they are.

Q Now, Mr. Graham, are you familiar with the application which has been filed in this case?

A Yes, sir, I am.

Q Have completion data on the Everest No. 1 Well been filed with the Commission?

A Yes, sir, it has.

Q Will you briefly outline for the record the completion information on that well?

A All right, sir. The Everest No. 1 Well was drilled to an actual depth of 10,542 feet which is a minus 7,199 feet, plugged back to 9,267 feet minus 6,925. The casing program is as follows: 13 3/8 and 1,208 feet with 1,464 sacks. Circulation was to the cellar; 9 5/8 and 3.000 feet with 1,500 sacks circulated at approximately 130 sacks. 7-inch casing was cemented at 9,370 feet, which is a subsea of 6,027 feet, cemented with 600 sacks. Top of cement by temperature survey on the 7-inch was 7,158 feet. The well was perforated in the lower Pennsylvanian sand. Perforations are from 9,079 feet to 9,085 feet; from 9,089 feet to 9,093 feet, and from 9,095 to 9,116 feet. A back pressure test was conducted on the well on October 2nd, 1957, with a calculated open flow of 23,000,000. The gas liquid ratio on the test was 90,840 cubic feet per barrel. The gravity of the condensate was 55.8 degrees API.

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Q Are any core analysis available from this well?

A Yes, sir. We have a full hole core analysis.

Q Has that been marked as Exhibit No. 5?

A Yes, sir.

MR. KELLAHIN: We have only one copy of the report analysis available and the witness will submit it as soon as he has completed his direct testimony.

Q (By Mr. Kellahin) Now, what interval was cored on this well, Mr. Graham?

A A full hole core analysis; 9,070 feet to 9,084 feet, of which 11 feet were recovered and analyzed. We have side-wall cores in the interval 9,079 to 9,006 feet. The average permeability in the 11 feet cored in the upper interval was 51 milidarcies. The average porosity in this same 11 feet was 9½ percent. The average porosity in the entire 33 feet that we interpret to be productive, or net pay, is 18.9 percent, using both side wall samples and the full hole core.

Q In addition to this, did you make any calculations on reserve, Mr. Graham?

A Yes, sir.

Q What other information did you use in connection with that calculation?

A We used a bottom hole pressure at a depth of 9,065 feet, that measure being obtained on a drillstem test as 3,747 PSI. The bottom hole temperature at 9,065 feet was 158 degrees Fahrenheit.

We used the well fluid gravity of .5617. Porosity average for the net pay, 18.9 percent. Comate water average for the 33 feet of net pay, 17.9 percent and from the microlog determined the net pay to be 33 feet.

Q Now, referring to what has been marked as Exhibit No. 6, what is that?

A That is a Schlumberger electrical log that we ran on the Everest No. 1 Well.

Q On that Exhibit, have you marked the formation tops, perforation, casing points, and other information?

A Yes, sir, we have.

Q Now, referring to Exhibit No. 7, the microlog, what does that show?

A The microlog is from the Everest No. 1 Well also and it indicates an effective pay of 33 feet.

Q Now, you stated you had made a reserve calculation. Have you made any study of the economics involved in the drilling in this area?

A Yes, sir, we have.

Q Have you prepared a summary, as Exhibit No. 8, on that information?

A Yes, sir, we have.

Q Now, referring to Exhibit No. 8, what does that show?

A That shows that we estimate the cost of drilling a well in this -- to this lower Pennsylvanian sand to be $172,700. The

first well cost approximately $297,000. It shows that by using the factors that I enumerated earlier, that the gas reserves under 320 acres are calculated to be twelve billion, two million cubic feet, that the liquid reserves and condensate are calculated to be 19,800 barrels and that the cost for developing two wells on 320 or 160 acre spacing would, of course, be double the cost of developing one well on 320, or $345.400. It shows that it is based on our estimates, or at least the -- our usual contract as to minimum taxes with gas companies, that we can expect to at least be assured of selling approximately 1 over 8,500 based on reserves, or in the case of 320-acre units, about 1,430,000 per day. It shows a gross working interest income to be $224 per day, gross royalty interest income of $32 per day, a pay out of 2.7 years for a 320-acre unit well, a pay out of 5.3 years for a 160-acre unit well.

Q Do you consider that an economic operation?

A We considered the 2.7 years as economically feasible. We could not consider the 5.3 economic feasibly, at least we have a hard time selling it to our management.

Q Upon what do you base your well costs?

A We base our well costs on the estimate to drill the Martin Well, Martin No. 1 Well, which has been approved and shown on our Exhibit No. 1.

Q And on what do you base your income figures as shown on this Exhibit?

A As stated earlier, we base the income figures on a sale

of one over 8,500 based on reserves.

Q At what prices?

A We can calculate a well price of the well fluid at eighteen cents, using sixteen cents for the gas, and approximately two cents for the condensate.

Q Now, based upon the information which is available to you at the present time, in your opinion, will one well effectively and economically drain and develop 320 acres?

A Of course, our information at this time on the reservoir itself is very limited. We do know that the average permeability in the 11 feet analyzed is 51 milidarcies. Bearing in mind that it is a gas reservoir with this 51 milidarcies permeability and the fact that we think that the two sections are underlined by the Pennsylvanian sand, we believe that at this time that a well will drain 320 acres, and it will drain it economically.

Q Will additional information be available within a period of one year?

A We anticipate that it will. We have indicated on Exhibit 1 a second well to be drilled, and we are now taking contracts for that well, or taking bids for contracts, and plan to start that well within the next two weeks. We anticipate drilling additional wells in the area and believe that by the end of one year we will have some additional data to base a more specific recommendation on.

Q Do you recommend a temporary spacing order of 320 acres for a period of one year?

A We recommend a one year temporary spacing order.

Q Now, the application filed in this case recommends the creation of a pool to be designated as the Atoka-Pennsylvanian Gas Pool. Do you have any recommendations as to the area to be included in that Pool?

A We are recommending that only Sections 14 and 15 be included at this time in the spacing order and in the Pool delineation.

Q In your opinion, is all of Sections 14 and 15, on the basis of information presently available, productive of gas?

A On the information that we have at this time we think that it is.

Q Do you have any recommendation to make as to well spacing?

A Our first well is located 660 from one line and 1980 from the other. We have tentatively located and have staked and located, I should say, our second well 990 from the closest unit line and 1980 from the east line of that unit. It is our recommendation that 990, 1980 be adopted for this Pool.

Q In that event, it would require an exception for the Everest No. 1?

A Yes, sir, that's correct.

Q Do you have any recommendation to make to the Commission as to the directions that should be taken on the formation of the drilling units?

A No, sir. We recommend that the operators be permitted to use any two continuous quarter sections either in the north-south

or east-west direction, and the main reason for that recommendation is that there are several small tracts in the area, and we think it would be easier to pool if we had that flexibility.

Q Is there anything further you wish to add to your testimony, Mr. Graham?

A No, sir.

Q Were Exhibits No. 5 through 8 prepared by you or under your direction?

A Yes, sir, they were, except one is a core analysis, of course, and two logs.

Q And the core analysis is the core analysis obtained by your company in the regular course of business?

A Yes, sir, by the Cole Laboratory.

MR. KELLAHIN: At this time we offer in evidence Exhibits 5 through 8 inclusive.

MR. PORTER: Without objection, these Exhibits will be admitted.

I believe you offered that core?

A Yes, sir.

MR. KELLAHIN: That is all.

CROSS EXAMINATION

BY MR. PORTER

Q Mr. Graham, I don't believe I got your estimate of the cost of completing the well.

A We estimate, for the second well, $172,700.

Q That's on your Exhibit No. 8?

A Yes, sir, that's right.

Q You say that at the end of the year you will have additional information?

A Yes, sir, we hope to. We have not signed a gas contract and not made a connection yet, but we do intend to produce this first well for drilling, the Martin No. 1 Well. We intend to use the gas both as drilling fuel and as drilling fluid, and we will obtain some information there, and we intend to continue our drilling program in the area and hope to have additional wells completed at the end of the year.

Q When do you expect to complete your Martin No. 1?

A The starting date, I estimate some time in the latter part of April, and we hope to complete it in about forty days, drilling days.

MR. PORTER: Does anyone have a question of Mr. Graham? Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q Mr. Graham, what evidence do you have that one well will drain 320 acres?

A Sir, we have very little evidence other than the permeability characteristics of the sand and the fact that it is a gas reservoir, and if it underlies 320 acres, it is our opinion that it will drain based on permeability and characteristics of the reservoir and if the fluids are free to move throughout the 320 acres.

Q Are there any other pools in the southeast New Mexico,

any other gas pools, completed in this same sand?

A It is my understanding that the two pools to the northeast, one being the Red Lake Pool, and the other, I believe the -- I can't recall the name of it, but it is about twelve miles to the northeast, is completed in this comparable Pennsylvanian sand, yes, sir. Empire Pool, I believe, is the one that is twelve miles to the northeast.

Q Has the Commission approved 320 acres for any of those pools?

A I believe they have for the Empire Pool, on a temporary basis. I am not sure of the expiration of that one year order, but that was a pool operated by Pan American. It is my understanding that they approved an order for that pool, Empire Pool.

Q Mr. Graham, you haven't determined that the order in the Empire Pennsylvanina Pool has expired?

A No, sir, I am not familiar with it other than what I have been told. They told me they approved a one year order for that pool. I don't think it has expired.

MR. PORTER: I think an investigation would prove that the order has expired.

Q (By Mr. Nutter) I want to ask a couple of questions here regarding the income that you have here. What is the formula that you base your income per day on?

A Well, the only basis we have at this time is a minimum pay contract that is offered to us by the gas company, at least

those are the figures we use to determine our pay outs, and we usually are offered 1 to 8,500 based on reserves. In otherwords, they will take one cubic feet per day per 8,500 cubic feet of reserves. In some contracts we have 7,300 in 10,000, but we use 1 to 8,500 as the usual.

Q And you have estimated your reserves under each tract based on core analysis?

A Yes, sir. We have estimated reserves based on core analysis and other factors. The 1 to 8,500, Mr. Nutter, is an average daily minimum take that the gas pipeline company assures us that they will take when we sign a contract.

Q Has the gas under this lease been contracted?

A No, sir, it has not.

Q So you don't know that the minimum take clause would be 1 to 8,500 in this particular case?

A No, sir, we don't know that it would be 1 to 8,500.

Q You don't know that the gas purchaser will take only the gas that is required by the minimum take clause?

A That is correct. That is a minimum take that they will assure us they will take, a daily average minimum, and we use those to calculate.

Q And if they take more than the minimum take, you have a better pay?

A Yes, sir, that's correct.

MR. NUTTER: That is all.

QUESTIONS BY MR. UTZ:

Q What was your footage recommendation? I didn't quite get it.

A 990 and 1980, sir. 990 from the closest unit line, 1980 from the more distant unit line.

Q 1980 from the section line, then?

A Yes, sir, that's correct.

Q No closer than 990 from the unit line?

A Yes, sir, that's correct.

Q Do you have a recommendation as to which way you would like these units to run?

A No, sir. I stated earlier that we had no recommendation, that they could either go east-west or north-south, just so they are continuous quarter sections.

Q Consist of a legal half section?

A Yes, sir, that's correct.

Q Now, as to your pool delineation, you want all of the sections, or have you recommended Sections 14 and 15?

A 14 and 15, yes, sir.

Q Of course, the east half of 14 and all of 15 is not yet proven, is it?

A Yes, sir, that's correct. It is not proven.

Q Wouldn't it be more practical to include a pool of 320 acres for your present completed Everest Well, and on that Pool, on 320-acre basis, a unit be approved?

A Yes, sir, that would be satisfactory with us. We base the two-section pool delineation -- that is based on our geologist's opinion that it underlies both sections, and we are assuming that it would be productive, but I am not familiar enough with our procedure here to know whether you take in a larger area than that already proved or not, so we just use the two-section because our geologist believes it is underlain by Pennsylvanian sand.

Q If the geologist proved to be wrong, they would be the ones --

A Yes, sir, that's right. They have been wrong before.

MR. UTZ: That's all I have.

QUESTIONS BY MR. COOLEY:

Q Mr. Graham, you state that the only evidence you have based the opinion that one well will drain 320 acres is on the core analysis?

A Yes, sir, the core analysis, 51 milidarcy permeability, mainly showing that there could be good movement of fluid in the reservoir and the fact that we think the sand is continuous over 320 acres. Of course, we will have to have additional information to really give a final opinion on that. At this time all we have is one well and all we can use is the permeability characteristics and the fact that it is underlain.

Q This one core involving this one small area is the only core that has been taken in this entire pool, is it not?

A Well, that's correct. These are the only permeability

measurements that have been made. We have measured porosity in the side walls since, but we have not measured permeability except in the 11 feet. That's the information we have.

Q Do you have any evidence that there is not wide variation?

A No, sir, not at this time. We have no reason to believe that there is or is not.

Q On your assumption that one well will drain 320 acres, wouldn't it be necessary that you know where the well is located on the 320-acre tract?

A Of course, the best way to determine -- in my opinion, one of the best ways to determine 320-acre tracts is to take interference tests, but on one well you will have to assume it is draining ratably 320 acres around the well.

Q That's my point. Under your proposed spacing plan, I believe, it would permit the drilling of a well 990 from the section line and 1980 feet from the section line --

A Yes, sir.

Q -- which would permit the drilling of both wells in the single section in either the south half or the north half, would it not?

A Yes, sir. It would permit drilling two wells in this section.

Q In your opinion, would this type of spacing pattern be as efficient as spacing the wells one either in the northeast quarter and one in the southwest quarter or one in the northwest quarter

and one in the southeast quarter? Would you have better drainage in that section if you staggered your wells in that fashion?

A Of course, the most efficient drainage would be to have the wells equally spaced in the reservoir, and I would have to answer yes to that, yes, sir.

Q Concerning the payout that you had calculated on these wells, that being 2.7 years for 320-acre well, and 5.3 years for 160-acre well, so long as the gas purchasers nominate given quantities of gas for this particular pool, wouldn't that be immaterial until such time as the area should become prorated?

A Yes, sir. I think it is common practice among operators to calculate payout based on reserves because companies, at least it is my understanding, take based on reserves where you have several pools and have to limit their takes. I think it is based on reserves, so we usually calculate our payout based on reserves. I think it is a valid calculation.

Q Well then, what is the purpose of coming at this time with 320-acre spacing with as little evidence as we have that one well would drain 320, why would it not be as feasible to remain on 160-acre spacing until it is prorated so that you can take whatever you could sell, produce whatever you could sell?

A I said that initially, in a reservoir, we look at the takes based on reserve. If you have a 640-acre unit in a 640-acre reservoir and you have four wells in it, you are going to sell the same amount of gas, in my opinion, or at least it is my understand-

ing, that you would sell if you had two wells in the reservoir because the gas company takes takes based on reserves, that's the way it is.

Q Provided two wells will drain 640?

A Yes, sir, and I don't think I can make a dogmatic statement that one well will drain that. With the limited evidence we have, we think it will.

MR. COOLEY: That is all.

QUESTIONS BY MR. UTZ:

Q Mr. Graham, according to the way I understand your footage location recommendation, your Martin No. 1 is already on a non-standard location, is that correct, sir?

A No, sir, I think we located it 990 from the north and 1980 from the east line of the section.

Q 1650 from the south line of the section?

A Yes, sir. Well, those are minimum distances, of course, and I understood that you located on minimum basis, that you are permitted to locate at least 990 and 1980 from the lines. My understanding is that as long as you are 990 from one line and 1980 from the other you are within spacing.

Q How close do you want to come to the section line?

A 1980.

Q You are 1650 on the south line now?

A Oh, I see. Well, it would have to be 1980 from the long side of the unit and 990 from the short side of the unit. I don't

see how you could locate 1980 from the long side without being 660 from the short side.

Q Wouldn't it be more practical for it to be 1650 and no closer than 990 from the unit line?

A From unit lines?

Q Yes.

A Yes, sir, that would be the same thing.

Q It would fit better?

A Yes, sir, that would fit it.

MR. UTZ: That's all.

MR. PORTER: Mr. Utz, I will ask you a question. What do you mean by unit line?

MR. UTZ: I mean the proration unit.

MR. PORTER: The 320-acre unit line?

MR. UTZ: Yes, sir.

MR. PORTER: Thank you.

Anyone else have any questions? Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q While we are on this, is your Martin No. 1 Well in a standard location according to the proposed rules?

A I just thought we talked about that, but it is my --

Q I don't mean the Martin, the Everest?

A No, sir, it is not.

Q That is an exception?

A Yes, sir, we asked that originally.

MR. NUTTER: Thank you.

MR. PORTER: Any further questions?

The witness may be excused.

MR. DUNN: May I ask a question?

MR.PORTER: Yes.

QUESTIONS BY MR. DUNN:

Q Do you know of any well in southeastern New Mexico or in the vicinity of your test that is producing oil from this same sand or correlative sand?

A Sir, I know of none, if I can answer that way.

Q Let me word the question a little differently. Are all of the correlative sands that you are acquainted with producing sand?

A I am only acquainted within the immediate area of the Everest, and I understand there is not one within four miles producing from this sand and that's my best knowledge of this sand, within four miles.

MR. DUNN: That is all.

MR. PORTER: Anyone else have a question? I believe you offered your Exhibits already.

MR. KELLAHIN: Yes.

MR. PORTER: The witness may be excused.

(Witness excused)

MR. PORTER: Any further testimony to be presented in

this case? Any statements?

MR. KELLAHIN: If the Commission please, obviously, the information we have with one well available, which we think is important, I am certain, on the basis of the information which is available to this pool, and the witnesses have testified that in their opinion it will effectively drain 320 acres, and due to the economics involved, and the fact, as pointed out, that there is not even a gas connection in there as yet, we feel a temporary order for a period of one year is fully justified until the additional information can be obtained, at which time we will return before the Commission and present out testimony to show whether the 320-acre spacing should be continued or not. But meanwhile, the pool should be developed on a uniform 320-acre pattern until such time as the additional information is available because of the economic situation and because of the core information and other information which is available and does indicate that one well will drain and develop 320 acres, and development on 160 acres, in the meanwhile, could and probably result in waste. Thank you.

MR. PORTER: Anyone else have anything further to say in this case?

MR. DUNN: David Dunn with Union Oil. Union wishes to make the statement that we do not have any acreage in the immediate vicinity of this test. We do have considerable holdings in Eddy County that we consider to be prospective of gas in the lower Pennsylvanian. We have completed a gas well south of this area a

considerable distance from the lower Pennsylvanian sand. We feel that 320 acres is the bare minimum and we question the advisability of draining anything less than a 640-acre spacing for the economical development of gas in Eddy County, New Mexico from the lower Pennsylvanian.

MR. ANDERSON: Donald Anderson of Malco, Malco also owns considerable acreage in Eddy County along this sporatic trend and owns an interest in three wells, and we protest the inclusion of the east half of Section 14, in which we are part owners of a 40-acre tract, on the basis that the gas production may be so marginal that you cannot justify less or a smaller spacing than 640 acres. We are the major owners in the two wells northeast, four miles northeast, and feel strongly that those two wells are so marginal that they should not have been drilled unless the spacing is granted on a 640-acre basis, and we would very strongly object at this time to including the east half of Section 14 in the area.

MR. PAYNE: We have a telegram here that I would like to read.

"Sinclair Oil & Gas Company wishes to concur with Standard of Texas in the following: Rules for Atoka Penn Gas Pool. No. 1, 320-acre proration units with units to run either north-south or east-west. 2: well spacing to be 990 feet from lease lines and 1980 feet between wells. 3: a location formula, 100 percent acreage. Sinclair Oil & Gas Company, Signed Layton A. Webb."

MR. PORTER: Anything further to be said? If not, we

will take the case under advisement and proceed -- take up next Case 1424.

C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, J. A. TRUJILLO, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in stenotype and reduced to typewritten transcript under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this 5th day of May, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph G. Trujillo
Notary Public

My Commission Expires:

October 5, 1960.

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

May 5, 1958

COPY

Mr. Jason Kellahin
P.O. Box 1713
Santa Fe, New Mexico

Dear Mr. Kellahin:

On behalf of your client, Standard Oil Company of Texas, we enclose two copies of Order R-1171 issued May 5, 1958, by the Oil Conservation Commission in Case 1419, which was heard on April 16th at Roswell.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF THE STATE OF NEW
MEXICO FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 1419
Order No. R-1171

APPLICATION OF STANDARD OIL COMPANY
OF TEXAS FOR THE CREATION OF THE ATOKA-
PENNSYLVANIAN GAS POOL IN EDDY COUNTY,
NEW MEXICO AND FOR THE ADOPTION OF
TEMPORARY POOL RULES FOR SAID POOL.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 16, 1958, at Roswell, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 5th day of May, 1958, the Commission, a quorum being present, having considered the application and the evidence adduced, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Standard Oil Company of Texas, seeks an order creating the Atoka-Pennsylvanian Gas Pool with vertical limits consisting of the Pennsylvanian formation and horizontal limits consisting of the W/2 Section 14 and S/2 Section 15, Township 18 South, Range 26 East, NMPM, Eddy County, New Mexico.

(3) That the applicant further proposes that temporary 320-acre spacing be established in the said proposed Atoka-Pennsylvanian Gas Pool.

(4) That only one well has been drilled to the Pennsylvanian formation in the vicinity of the proposed Atoka-Pennsylvanian Gas Pool, being the applicant's Everest Well No. 1 in the SW/4 of said Section 14.

(5) That the completion of the above-described Everest Well No. 1 does not warrant the creation of a pool of the magnitude proposed by the applicant but that it does warrant the creation of a pool consisting of the SW/4 of said Section 14.

(6) That the applicant has failed to prove that one well will economically and efficiently drain 320-acres in the Atoka-Pennsylvanian Gas Pool or that there is any justification for the establishment of temporary 320-acre spacing in said pool in the absence of such proof.

(7) That the operation, spacing, and drilling of wells in the Atoka-Pennsylvanian Gas Pool should continue to be governed by Rule 104 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That a new pool for the production of gas from the Pennsylvanian formation be and the same is hereby created and designated as the Atoka-Pennsylvanian Gas Pool consisting of the following described area:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM
Section 14: SW/4

(2) That the application of Standard Oil Company of Texas for the establishment of temporary 320-acre spacing in the Atoka-Pennsylvanian Gas Pool, be and the same is hereby denied.

(3) That the operation spacing, and drilling of all wells in the Atoka-Pennsylvanian Gas Pool shall continue to be governed by the provisions of Rule 104 of the Commission Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

A. L. PORTER, Jr., Member & Secretary

ir/

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

APPLICATION OF STANDARD OIL COMPANY OF TEXAS FOR AN ORDER CREATING AN ESTABLISHED GAS POOL FOR PENNSYLVANIAN PRODUCTION AND ESTABLISHING 320-ACRE GAS UNITS IN SECTIONS 14 AND 15, T. 18 S., R. 26 E., EDDY COUNTY, NEW MEXICO

CASE No. 1419

APPLICATION

Comes now Standard Oil Company of Texas and applies to the Oil Conservation Commission of the State of New Mexico for an order establishing a designated gas pool for production from the Pennsylvanian Sand of gas and gas condensate in Township 18 South, Range 26 East, N.M.P.M., Eddy County, New Mexico to be designated as the Atoka-Pennsylvanian Gas Pool, and for the adoption of pool rules on a temporary basis for a period of one year providing for uniform spacing and establishment of 320-acre drilling units for said pool, units to consist of adjacent quarter-sections, with well locations fixed at 990 feet and 1980 feet from outside boundaries of said units, and for such other and further orders as the Commission may determine proper.

In support of this application, the applicant would show the Commission:

1. That applicant has completed its J. H. Everest No. 1 well at a location 1980 feet from the South line and 660 feet from the West line of Section 14, Township 18 South, Range 26 East, N.M.P.M., Eddy County, New Mexico, as a gas condensate producer in the Pennsylvanian sand.

2. That applicant is the operator of a 320-acre tract pooled in the Pennsylvanian Sand, and consisting of the W 1/2 of Section 14, T. 18 S., R. 26 E., Eddy County, New Mexico.

3. That applicant is the operator of a 320-acre pooled tract in the Pennsylvanian Sand and consisting of the S 1/2 of Section 15, T. 18 S., R. 26 E., N.M.P.M., Eddy County, New Mexico

4. That applicant has numerous leases in and adjoining Sections 14 and 15, in T. 18 S., R. 26 E., Eddy County, N. M.

5. That applicant plans to drill its Martin No. 1 well in the NW 1/4 SE 1/4 of Section 15, T. 18 S., R. 26 E., for production from the Pennsylvanian Sand, Eddy County, New Mexico.

6. That on the basis of information presently available, it is believed that one well will efficiently and economically drain and develop 320 acres in the area involved, and that the establishment of 320-acre drilling units for the pool is in the interests of conservation, will prevent waste, and that correlative rights will be protected.

WHEREFORE applicant requests that this application be set for hearing by the Commission at the regular April, 1958, hearing of the Commission, or as soon thereafter as may be possible, and that after notice and hearing asprovided by law, the Commission enter its order creating a new gas condensate pool for Pennsylvanian production, fixing drilling units at 320 acres, establishing well locations, and such other and further orders as may be proper.

Respectfully submitted,

STANDARD OIL COMPANY OF TEXAS

By:

KELLAHIN and FOX
P. O. Box 1713
Santa Fe, New Mexico
Attorneys for Applicant

Jason W. Kellahin

No. 11-58

SUPPLEMENTAL DOCKET: REGULAR HEARING APRIL 16, 1958

Oil Conservation Commission 9 a.m., Elks Club, 200 North Richardson Avenue

ROSWELL, NEW MEXICO

CASE 1424: Application of Humble Oil and Refining Company for an unorthodox well location. Applicant, in the above-styled cause, seeks an order authorizing an unorthodox oil well location for its Federal-North Kirtland Unit Well No. 1 at a point 1230 feet from the North line and 998 feet from the East line of Section 19, Township 30 North, Range 14 West, San Juan County, New Mexico, said well to be drilled as a wildcat to the Dakota formation.

April 3, 1958

ga

Santa Fe, New Mexico
April 5, 1958

Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Case 1419 Application of Standard of Texas
Hearing of April 16, 1958

Gentlemen:

The above captioned application provides for the creation of the Atoka-Pennsylvania Gas Pool and to govern spacing in Township 18 S., Range 26 E.

While I have no objection to the creation of the Pool, I do herein register objection to the spacing of 320 acres. My reason for this is that there are adjacent holdings too small to qualify under the 320 acre spacing and this would result in draining from these holdings where drilling would not be permitted and consequently no production.

It is my understanding that there is a producing oil well in Section 14 of the above township with sufficient production to qualify this area as an oil field. This is a deep well and it is my understanding also that in this same township there are numerous shallow wells being worked for oil and that any gas flows are not being conserved but allowed to waste.

Thank you for giving consideration to this matter.

Yours very truly,

W. H. SWEARINGEN

Box 93, Santa Fe

Std Oil Co of Tex.
EX # 5 CASE #1419

CORE LABORATORIES, INC
Petroleum Reservoir Engineering
DALLAS 1, TEXAS

September 3, 1957

REPLY TO
P. O. BOX 36
MIDLAND, TEXAS

Standard Oil Company of Texas
Box 1660
Midland, Texas

Attention: Mr. J. P. Jones

Subject: Core Analysis
Everest No. 1 Well
Wildcat
Eddy County, New Mexico
Location: Sec. 14-T18S-R26E

Gentlemen:

Diamond coring equipment and water base mud were used to core the interval, 9027 to 9112 feet, in the Everest No. 1. Samples of recovered formation on which analysis was desired were selected as directed by representatives of Standard Oil Company of Texas, were quick-frozen to preserve fluid content, and were transported to the Hobbs laboratory for analysis. Percussion type side wall samples were taken between 9076 and 9116 feet, and these samples were analyzed for porosity and fluid content at the Monahans laboratory. The results of all analyses are presented in this report.

Pennsylvanian formation analyzed between 9070 and 9084 feet exhibits favorable residual liquid saturations, and is interpreted to be gas productive at points of measurable permeability. The average permeability of the 11 gas productive feet in this zone is 51 millidarcys, and the total observed natural productive capacity is 561 millidarcy-feet, probably adequate to support satisfactory rates of production without the necessity for treatment. The average porosity of this interval is 9.5 per cent, and the average empirically calculated *connate* water saturation is 30 per cent of pore space. Average core analysis data for this interval have been summarized on page one.

Results of the analysis of side wall samples taken at various depths between 9076 and 9116 feet are presented in tabular and graphical form on the lower portion of the Completion Coregraph.

We sincerely appreciate this opportunity to be of service to you and trust that the information furnished with this report will prove useful in making a preliminary evaluation of the Pennsylvanian formation analyzed from this well.

Very truly yours,

Core Laboratories, Inc.

RS Bynum Jr (PE)

R. S. Bynum, Jr.,
District Manager

RSB:JDJ:sw
7 cc. - Addressee

Form P-11B

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 1 of 1 File WP-3-860 FC
Well Everest No. 1

CORE SUMMARY AND CALCULATED RECOVERABLE OIL

FORMATION NAME AND DEPTH INTERVAL: Pennsylvanian 9070.0-9084.0

FEET OF CORE RECOVERED FROM ABOVE INTERVAL	14.0	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE		30.9
FEET OF CORE INCLUDED IN AVERAGES	11.0	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	(c)	30
AVERAGE PERMEABILITY: MILLIDARCYS	51	OIL GRAVITY: °API		
PRODUCTIVE CAPACITY: MILLIDARCY-FEET	561	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL		
AVERAGE POROSITY: PER CENT	9.5	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL		
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	0.0	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT		

Calculated maximum solution gas drive recovery is barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. *(Please refer to footnotes for further discussion of recovery estimates.)*

FORMATION NAME AND DEPTH INTERVAL:

FEET OF CORE RECOVERED FROM ABOVE INTERVAL		AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	
FEET OF CORE INCLUDED IN AVERAGES		AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	
AVERAGE PERMEABILITY: MILLIDARCYS		OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET		ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT		ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE		CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	

Calculated maximum solution gas drive recovery is barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. *(Please refer to footnotes for further discussion of recovery estimates.)*

(c) Calculated (e) Estimated (m) Measured (*) Refer to attached letter.

These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.

CASE 1419
EX. 8

STANDARD OIL COMPANY OF TEXAS
ECONOMIC COMPARISON OF
160 AND 320 ACRE SPACING
ATOKA (PENN.) FIELD
EDDY COUNTY, NEW MEXICO

Area, acres	320	320	160
Number of wells	1	2	1
Total investment, dollars	172,700	345,400	172,700
Gas reserves, MMCF	12,200	12,200	6,100
Liquid reserves, barrels	91,800	91,800	45,900
Total gas production, MCFPD	1,430	1,430	715
Gross W.I. income, dollars/day	224	224	112
Gross R.I. income, dollars/day	32	32	16
Payout, years	2.7	5.3	5.3
Rate of return, %	40	19	19
Profit to investment ratio	4.3	1.8	1.8